

Exhibit A

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PATENT APPLICATION**

Appl. No. : 10/749,885  
Applicant : Kendall S. Wills et al.  
Filed : December 31, 2003  
TC/A.U. : 2863  
Examiner : Bhat, Aditya S.

Confirmation No. 8899

Docket No. : TI-37080  
Customer No. : 23494

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

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8-12-2005  
Jackie McBride  
Jackie McBride

**DECLARATION UNDER 37 C.F.R. 1.131**

Sir:

KENDALL S. WILLS and KARTIK RAMANUJACHAR declare as follows:

1. THAT they are the applicants in the subject application for Letters Patent;
2. THAT they conceived the invention as set forth in the attached invention disclosure, the attached paper entitled Solder Bump Defects in Ceramic Flip Chip Packages and Their Acoustic Signatures and in the subject application for Letters Patent in the United States prior to May 12, 2003 and continually worked on the subject invention up to their reduction to practice as well as up to the filing of the

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provisional application Serial No. 60/486,663, filed July 11, 2003, all in the United States;

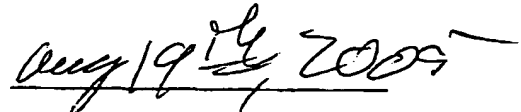
3. THAT they reduced the invention to practice as disclosed in the subject application in the United States prior to May 12, 2003;

4. THAT all redacted dates on the attached page(s) of the laboratory notebook are prior to May 12, 2003.

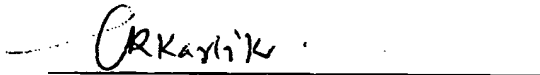
I declare under penalty of perjury that the above stated facts are true and correct on information and belief.



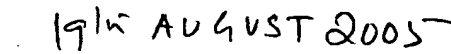
Kendall S. Wills



Date



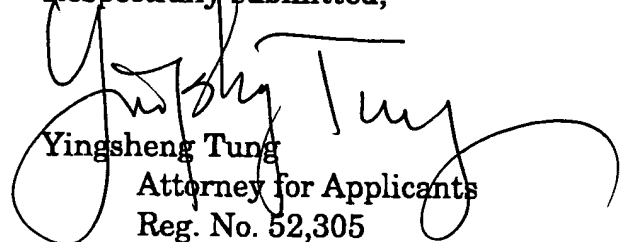
Kartik Ramanujachar



Date

Texas Instruments Incorporated  
P. O. Box 655474, M/S 3999  
Dallas, Texas 75265  
(972) 917-5355

Respectfully submitted,

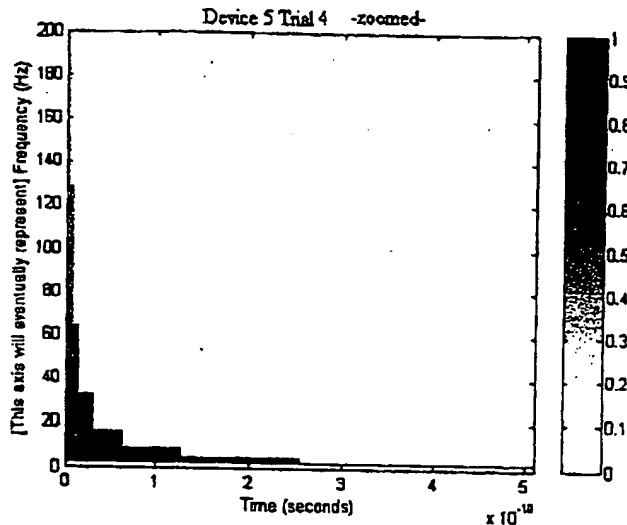
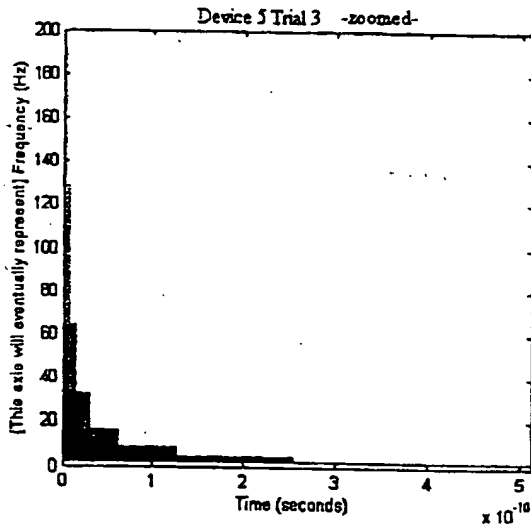


Yingsheng Tung  
Attorney for Applicants  
Reg. No. 52,305

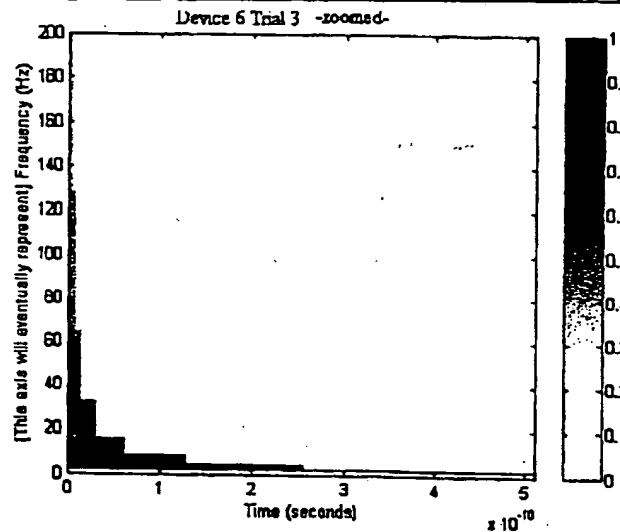
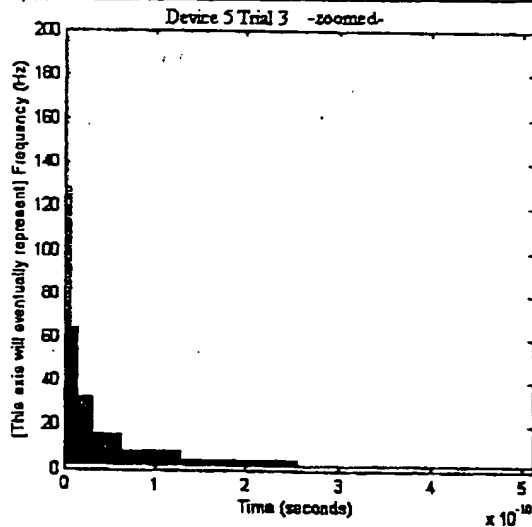
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PROJECT NAME FDA TDRSNOTEBOOK NO. 1DAB 4 ANALYSIS

THE WT USING THE DAUBCHIES WAVELET WAS TESTED ON TWO TRIALS OF UNIT 5 (no die or bumps). THE RESULTS WERE VISUALLY SIMILAR. THE WT(DAB4) IS REPEATABLE FOR TDR SIGNALS



THE WT(DAB4) WAS ALSO USED IN TWO SIMILAR UNITS (5 & 6) w/ BOTH DIE & BUMPS REMOVED. THE RESULTS WERE VISUALLY SIMILAR. THE WT(DAB4) IS CONSISTENT



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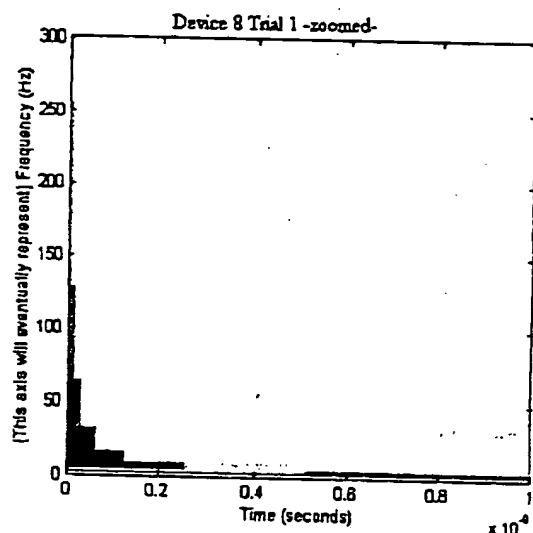
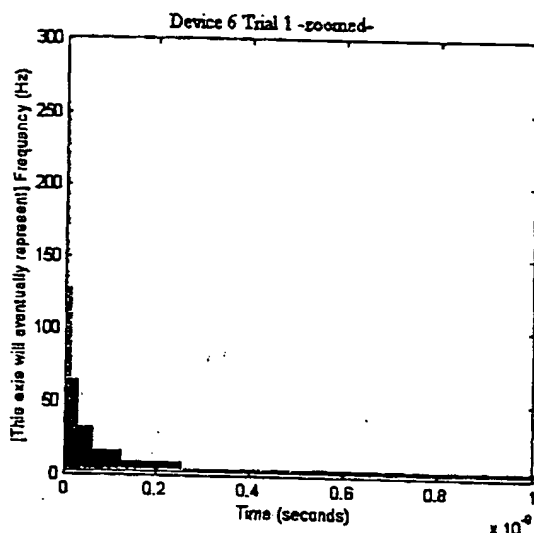
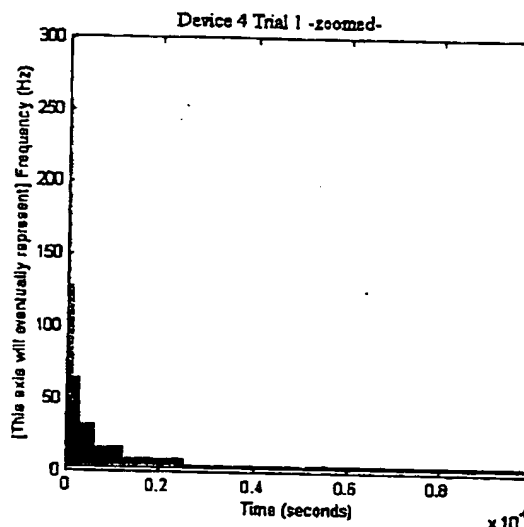
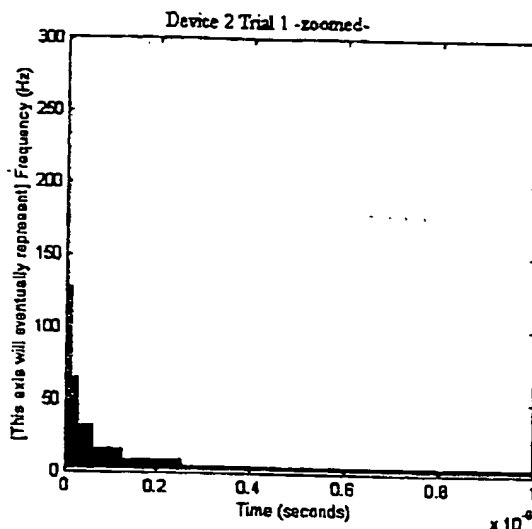
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PROJECT NAME EDADRS

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THE WT (DABY) WAS THEN USED ON UNITS IN  
ALL FOUR PREPARED STATES  
U2H, U4H, U6H, U8H



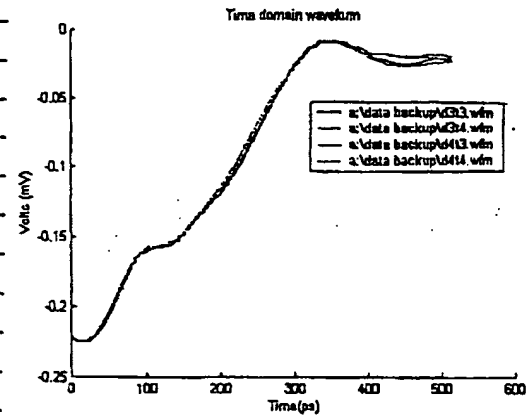
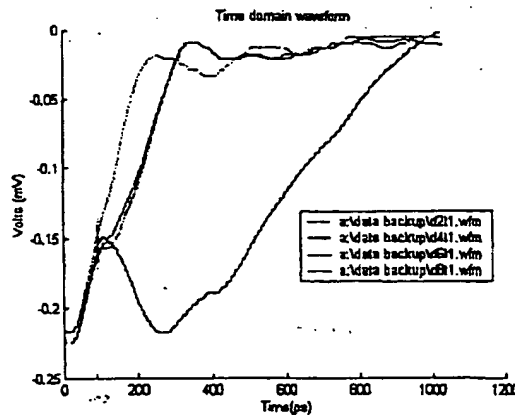
WT Using D4 Wavelets for Four Dissimilar Units

THE WT (DABY) SHOWS PROGRESSION BUT IT  
IS FAR LESS NOTICABLE THAN IN THE  
HAAR WT.

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DATE \_\_\_\_\_ 19 \_\_\_\_\_

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PROJECT NAME FDATDRSNOTEBOOK NO. 1WT(HAAR) ANALYSIS

FROM ~~20-30~~ PS, THE TDR WAVEFORMS ARE IDENTICAL. THE ~~INITIAL~~ VOLTAGE DIP AT THE BEGINNING OF THE TDR SIGNAL IS THE RESULT PRIMARILY OF THE PROBE TIP CONTACTING THE UNIT.

AFTER THIS POINT, THERE ARE DIFFERENCES BETWEEN THE DEVICES, BUT THEY <sup>CAN BE</sup> VERY SLIGHT AND DIFFICULT TO INTERPRET, ESPECIALLY FOR UNITS WHERE CIRCUIT PATHS ARE NEARLY THE SAME LENGTH.

NOTE A TECHNIQUE THAT WOULD EMPHASIZE THE DIFFERENCES WOULD AID COMPARATIVE TDR GREATLY AND COULD HELP BETTER ISOLATE DEFECTS.

SOLUTION WAVELET ANALYSIS, ESPECIALLY USING HAAR WAVELETS, CAN BE USED TO HELP HIGHLIGHT THE DIFFERENCES. BECAUSE THE HIGH FREQUENCIES WHICH ARE ASSOCIATED WITH THE ~~WAVE~~ CHANGES OF THE WAVEFORM, CAN BE COMPARED BETWEEN UNITS TO DETERMINE IF THEY EXHIBIT SIMILAR CHANGES.

THE HAAR WT IS ALSO VERY USEFUL AT IDENTIFYING THE RESISTIVE (FLAT TDR SIGNAL) AREAS IN THE SIGNAL. THESE AREAS EXHIBIT ONLY LOW FREQUENCIES AND CAN BE EASILY IDENTIFIED USING THE HAAR WAVELET AS A BASIS.

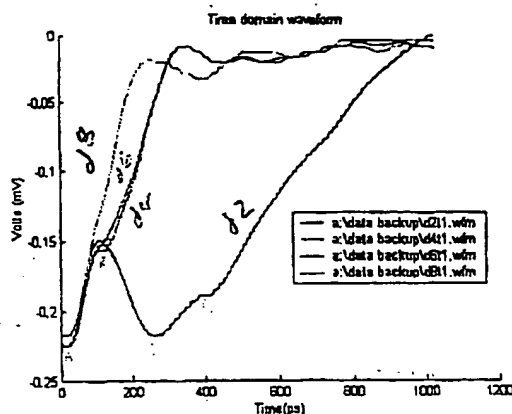
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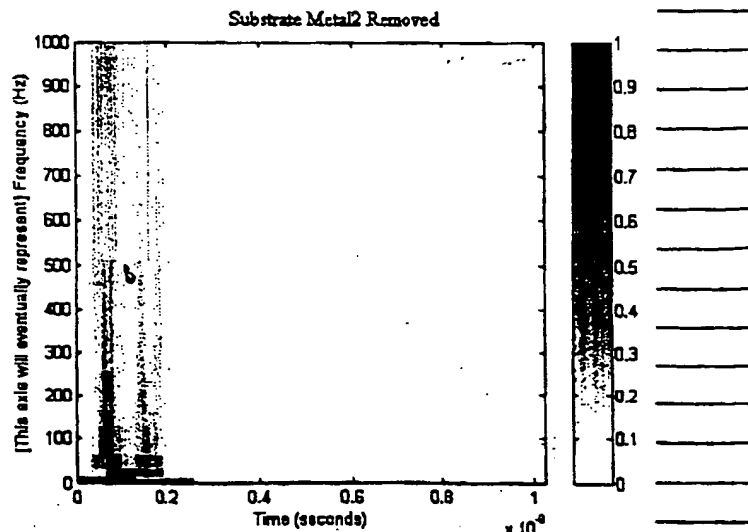
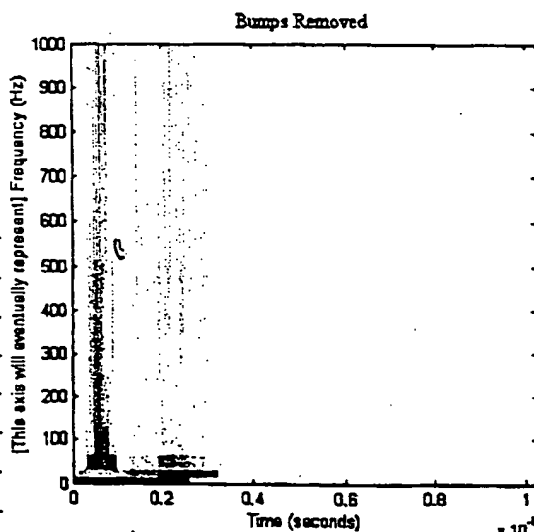
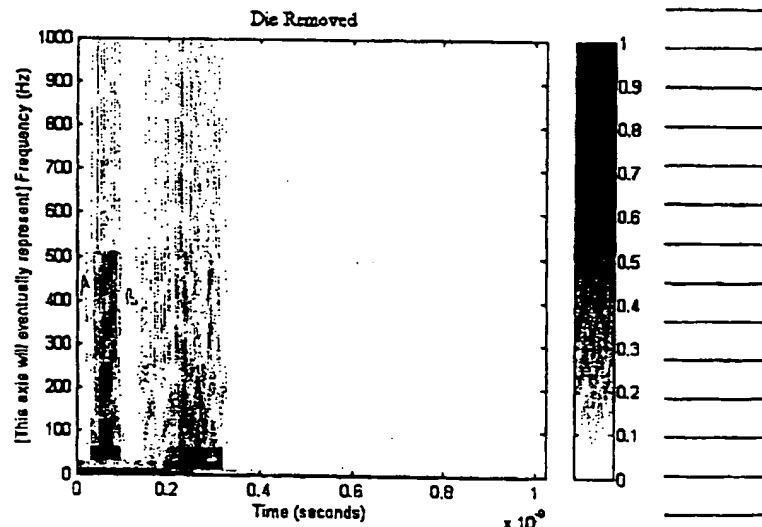
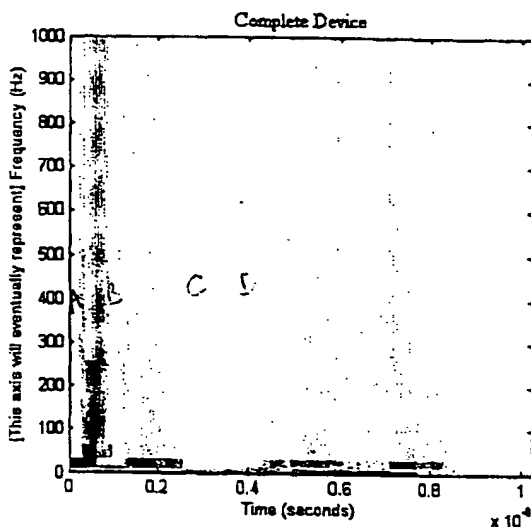
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PROJECT NAME EDATERSNOTEBOOK NO. 1

SOME REGIONS OF INTEREST IN THE TIME DOMAIN WFM'S ARE LABELED. I FOCUSED MY EFFORTS ON REGION A, THE AREA WHERE THE WFM'S BEGAN TO EXHIBIT THEIR DIFFERENCES. WE CAN SEE EASILY WITH THE HARP WAVELET THAT MORE & MORE HIGH FREQUENCY COMPONENTS ARE INTRODUCED AS THE ELECTRICAL PATH SHORTENS



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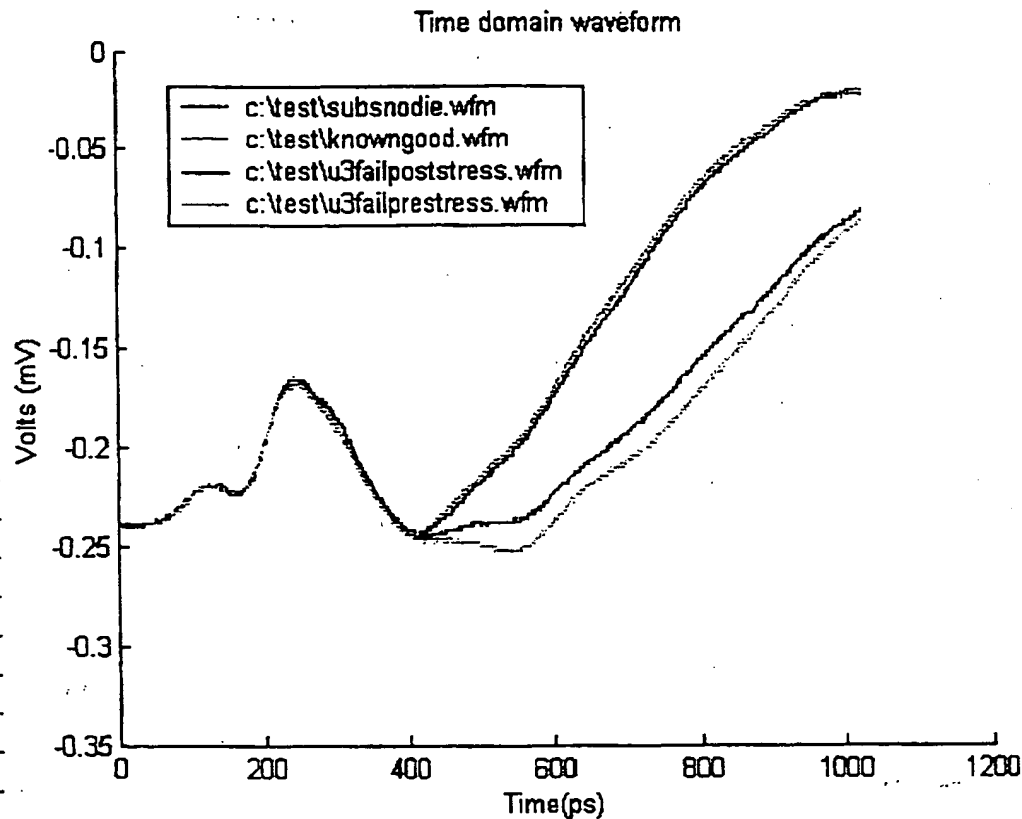
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PROJECT NAME FDATE'SNOTEBOOK NO. 1

THE UT (HARR) WAS USED ON A SERIES OF TDR WAVEFORMS ACQUIRED BY OMAR DIAZ & LEON FOR COMPARATIVE TDR. THE DEVICE ORIGINALLY SHOWED TO HAVE A FAILURE AT THE BUMP-TO-DIE INTERFACE.

AFTER STRESSING THE UNIT ELECTRICALLY THE UNIT RECOVERED & ITS NEW SIGNATURE RESEMBLED THAT OF A GOOD UNIT



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